



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,272	03/31/2004	Mark L. Brown	34911.P18988	7485
7590 01/17/2007 Grossman, Tucker, Perreault & Pfleger, PLLC c/o PortfolioIP P.O. Box 52050 Minneapolis, MN 55402			EXAMINER PARK, ILWOO	
			ART UNIT	PAPER NUMBER
			2182	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/17/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/815,272	BROWN ET AL.	
	Examiner	Art Unit	
	Ilwoo Park	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/9/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-31 are presented for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 7-18, and 23-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Yu [US 5,764,903].

As for claim 1, Yu teaches an apparatus comprising:

an integrated circuit capable of receiving [col. 4, lines 50-60] an input/output (I/O) request to write data stored on at least one target device comprised in at least one local storage array [e.g., local disk 16 in fig. 1; col. 1, lines 43-47], said integrated circuit further capable of generating [col. 10, lines 33-37] one or more I/O transactions capable of writing data on at least one target device comprised in at least one remote storage array [e.g., remote disk 34 in fig. 1; col. 1, lines 43-47].

4. As for claims 2 and 18, Yu teaches said integrated circuit is further capable of generating one or more I/O transactions capable of writing data on at least one target device comprised in at least one local storage array [col. 10, lines 33-37].

5. As for claims 7 and 23, Yu teaches said integrated circuit capable of receiving [col. 11, lines 47-52] an input/output (I/O) request to read data stored on at least one target device comprised in at least one local storage array, said integrated circuit further

capable of generating [col. 10, lines 33-37] one or more I/O transactions capable of reading data on at least one target device comprised in at least one remote storage.

6. As for claim 8, Yu teaches a method comprising:

receiving [col. 4, lines 50-60] an input/output (I/O) request to write data stored on at least one target device comprised in at least one local storage array [e.g., local disk 16 in fig. 1; col. 1, lines 43-47]; and

generating [col. 10, lines 33-37] one or more I/O transactions capable of writing data on at least one target device comprised in at least one remote storage array [e.g., remote disk 34 in fig. 1; col. 1, lines 43-47].

7. As for claim 9, Yu teaches generating one or more I/O transactions to mirror data on said local storage array and said remote storage array [col. 2, lines 16-24].

8. As for claim 10, Yu teaches generating one or more I/O transactions to stripe data on said local storage array and said remote storage array [col. 9, lines 35-42].

9. As for claim 11, Yu teaches receiving [col. 11, lines 47-52] an input/output (I/O) request to read data stored on at least one target device comprised in at least one local storage array; and generating [col. 10, lines 33-37] one or more I/O transactions capable of reading data on at least one target device comprised in at least one remote storage array.

10. As for claim 12, Yu teaches determining the status of said remote storage array, and, if said remote storage array is incapable of transmitting data in response to said one or more I/O transactions, regenerating said one or more I/O transactions to read

Art Unit: 2182

data to said remote storage array at one or more preselected times [col. 6, lines 42-55; col. 11, lines 47-52].

11. As for claim 13, Yu teaches storing information based on data unread from said remote storage array on said local storage array, and, retrieving said information based on data unread from said local storage array [e.g., col. 6, lines 53-56; col. 11, lines 47-52].

12. As for claim 14, Yu teaches determining the status of said remote storage array, and, if said remote storage array is incapable of receiving data, regenerating said one or more I/O transactions to write data to said remote storage array at one or more preselected times [col. 6, lines 42-55].

13. As for claim 15, Yu teaches storing information based on data unwritten data related to said I/O transactions to write data to said remote storage array, and, retrieving said information based on data unwritten data to said remote storage array [col. 6, lines 53-56].

14. As for claim 16, Yu teaches copying data from said at least one target device comprised in said at least one remote storage array to said at least one target device comprised in said local storage array [col. 11, lines 50-52].

15. As for claim 17, Yu teaches a system, comprising:

a circuit card comprising an integrated circuit capable of communicating in accordance with a plurality of different communication protocols [e.g., col. 4, lines 8-11], the circuit card being capable of being coupled to a bus, and said integrated circuit further capable of receiving [col. 4, lines 50-60] an input/output (I/O) request to write

Art Unit: 2182

data stored on at least one target device comprised in at least one local storage array [e.g., local disk 16 in fig. 1; col. 1, lines 43-47], said integrated circuit further capable of generating [col. 10, lines 33-37] one or more I/O transactions capable of writing data on at least one target device comprised in at least one remote storage array [e.g., remote disk 34 in fig. 1; col. 1, lines 43-47].

16. Regarding claims 24-31, these constitute the article comprising a storage medium having stored thereon instructions that when executed by a machine result in the limitations of the method disclosed in previously rejected claims. These present claims are rejected under the same basis.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claim 3-6 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu [US 5,764,903] in view of well known in the art.

As for claims 3, 5, 19, and 21, though Yu teaches said local storage array and said remote storage array each comprises a redundant array of inexpensive disks (RAID), Yu does not expressly disclose the RAID comprises RAID Level 1 storage arrays.

As for claim 5, though Yu teaches said local storage array and said remote storage array each comprises a redundant array of inexpensive disks (RAID), Yu does

not expressly disclose the RAID comprises at least one of RAID Level 0, RAID Level 10, and RAID Level 1E storage arrays.

However, it is well known in the art of RAID having RAID Level 0, RAID Level 1, RAID Level 10, or RAID Level 1E storage arrays. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify to include RAID Level 0, RAID Level 1, RAID Level 10, or RAID Level 1E storage arrays in order to increase applicability of mirroring and striping in the RAID of Yu.

19. As for claims 4, 6, 20, and 22, the combination of Yu and well known in the art teaches a transaction to mirror data on at least one of said RAID Level 0, RAID Level 1, RAID Level 10, and RAID Level 1E storage array in response to said I/O request to write data stored on at least one target device comprised in at least one local storage array [col. 10, lines 33-37; col. 1, lines 43-47].

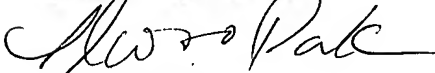
Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ilwoo Park whose telephone number is (571) 272-4155. The examiner can normally be reached on Monday through Friday from 9:00 AM to 5:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Huynh can be reached on (571) 272-4147. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

Art Unit: 2182

information for unpublished applications is available through Private PAIR only. For more information about the PAIR system see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**ILWOO PARK
PRIMARY EXAMINER**

A handwritten signature in cursive script, appearing to read 'Ilwoo Park', written over the printed name.

Ilwoo Park

December 26, 2006